

Uvs Nuur, Lake

Category: Inland Aquatic Biomes.

Geographic Location: Asia.

Summary: A salty lake located between desert and tundra, Uvs Nuur is nevertheless important to many migrating birds and supports some unique fish species.

Lake Uvs Nuur is a highly saline lake in an arid, high-altitude basin located mostly in Mongolia and partly in Russia. The largest lake in Mongolia, at 1,300 square miles (3,350 square kilometers), Uvs Nuur has a surface elevation of 2,490 feet (759 meters). The lake averages a depth of just 20 feet (6 meters). Uvs Nuur is a remnant of an ancient lake that covered 35,500 square miles (92,000 square kilometers) and plunged 2,430 feet (740 meters)



A satellite view of Uvs Nuur Lake in West Mongolia and South Siberia, Russia. The lake is a remnant of a much larger ancient lake that once extended as much as 35,500 square miles (92,000 square kilometers). (NASA)

deep. Ancient mountain uplift separated the present Uvs Nuur basin from the Khirgis Nuur basin to its south, causing major depletion of its waters. Glacial action, winds, and fluid erosion processes molded the present lake basin. The lake's surface level was apparently more than 130 feet (40 meters) higher in the last ice age, but evaporation has steadily reduced it to the current state, with high groundwater salinity part of the proof.

The lake is fed by several rivers that originate at the edges of the basin, either in the Altai Mountains to the west or the Khangai Mountains in the east. There is no outlet; the basin is endorheic, meaning draining to the interior. This contributes to the degree of salinity, which is roughly half that of ocean water. The basin spans the geoclimatic boundary between Siberia and central Asia, making for extreme variance in temperatures. From a high of 117 degrees (47 degrees C) in summer, the temperature can reach -72 degrees F (-58 degrees C) in winter. The water temperature gradient responds to these changes; for instance, in summer a surface temperature 77 degrees F (25 degrees C) can change to 66 degrees F (19 degrees C) at the bottom. Uvs Nuur is ice-covered from October to May, despite its high salinity.

Between 1999 and 2008, water salinity shifted and conditions changed from low algal production and nutrient content, accompanied by clear and oxygenated waters, to grey-colored, somewhat turbid waters with medium levels of nutrients and an intermediate level of productivity.

Flora

Uvs Nuur contains a diversity of floral communities. Its shallow shore habitats are occupied by species-poor spreads of reed marshes. These are often severely and continuously disturbed by cattle; their grazing and trampling results in the development of annual mudbank communities. The region also includes low reedbeds of mare's tail and of spike-rush that develop in shallow water bodies. Aquatic vegetation is primarily represented by fennel pondweed, with water milfoil, stoneworts, and gutweed present. In addition, free-floating duckweed communities appear in several oxbow lakes and pools around the fringe.

At times when the water level drops, short-living stands of dwarf rushes establish themselves on the moist mudbanks, alongside alkali seepweed. Some celery-leaved buttercup appears in places, along with oak-leaved goosefoot.

Some salt-tolerant plants grow in shallow depressions that have been cut off from Uvs Nuur, such as glasswort around the bare central part of salt pans with a thick salt crust, followed by stands of alkali seepweed. The transition areas from this groundwater-dependent, halophytic vegetation to the steppe and semidesert are often inhabited by belts of tall and coarse tussocks of Mongolian derris and its associated species.

Fauna

Uvs Nuur is home to 49 species of phytoplankton, 83 types of phyto-benthic algae, 45 kinds of aquatic macrophytes, 66 different zooplankton, and 118 species of zoobenthos. The littoral invertebrate community includes scuds, small waterfleas, oar-foot crustaceans, seed shrimp, and insect larvae.

Uvs Nuur is an important habitat for 46 resident waterfowl species, as well as 215 different kinds of birds migrating south from Siberia. As the lake basin is the northernmost area of central Asia, Uvs Nuur and a few smaller neighboring lakes are key nesting sites for many, including at least 10 species that overwinter here. Altogether, 20,000–50,000 waterfowl every year utilize the 24-mile (40-kilometer)-wide delta of the Tes-Khem River, a major lake tributary that meanders through an extensive wetland complex. The Uvs Nuur is critical for waterfowl conservation for such endangered species as white-headed duck and swan goose.

A few dozen mammal species live or pass through the Uvs Nuur biome, including the globally endangered snow leopard.

The lake supports several fish species from genus *Oreoleuciscus*, considered near-endemic to the region, meaning it is found scarcely anywhere else in the world. Due to the relative isolation of Uvs Nuur, many of its fish species are endemic or near-endemic. Altai osman, Mongolian grayling, and various species of the ray-finned genus *Triplophysa* also inhabit the lake.

Environmental Issues

As a moist, if salty oasis in a high basin sited between tundra and desert, Uvs Nuur has not been polluted or developed by industrial or commercial interests. Much of its human interaction takes the shape of pastoral and nomadic activity. The area is generally one of low population density, although livestock herd size in the province has expanded in recent years. There has also been some diversion of water from tributaries, which at times makes fish migration difficult. As environmental protection actions increase in Mongolia, some attention has been paid to Uvs Nuur, which the government classifies as a Strictly Protected Area. Nearby, a National Park is located on one of the lake's tributaries. Various international designations have been conferred on the lake and its basin, such as Biosphere Reserve, World Heritage Site, Ramsar Site, and Important Bird Area.

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Further Reading

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Valdivian Temperate Forests

Category: Forest Biomes.

Geographic Location: South America.

Summary: A virtual continental island between the Pacific Ocean and the Andes Mountains, these forests boast high species endemism but face growing threats from human activities and climate change.

The Valdivian Temperate Forests biome is one of the few temperate rainforest areas in South America. The distribution area, sandwiched between the Pacific Ocean and the Andes Mountains in the southern reaches of Chile and a small area of Argentina, constitutes a virtual continental island. Species richness is relatively low, but the rate of species found only here, or endemism, is exceptionally high—about 45 percent for all vertebrates, and up to 90 percent of seed plants.

Phylogenetic uniqueness, too, is high; for example, there are 32 genera of trees of which four-fifths are monotypic, meaning the genus comprises just a single species. These factors all indicate long and ancient isolation.

Geography and Climate

The wet temperate forests dominate the narrow strip between the western slopes of the Andes and the Pacific Ocean from just north of the Chilean capital Santiago, to the southern tip of the Taitao Peninsula. The forests are found in two north-south running mountain ranges as well as the intermediate valley. The peaks of the Andes are higher toward the north, up about 23,000 feet (7,000 meters), than the southern range, which peaks at 13,123 (4,000 meters). Treelines are the same, at roughly 7,874 feet (2,400 meters). Forests are replaced by montane grasslands and shrublands above the treeline in the north, but by temperate grasslands, shrublands, and savannas further south.

The Andes were extensively glaciated during the Pleistocene, although volcanic rock and deposits have since covered most of the glaciated surfaces. The coastal range, Cordillera de la Costa, is a mountain belt rising to 4,265 feet (1,300 meters), parallel to the coast and the Andes, which remained largely unglaciated. It submerges off the shore south of 42 degrees south, but forms the large Chiloé Island and the Chonos Archipelago. Between the two mountain ranges lies a low structural depression valley, which submerges into the ocean at the same point.